Trend Study 14-31-99

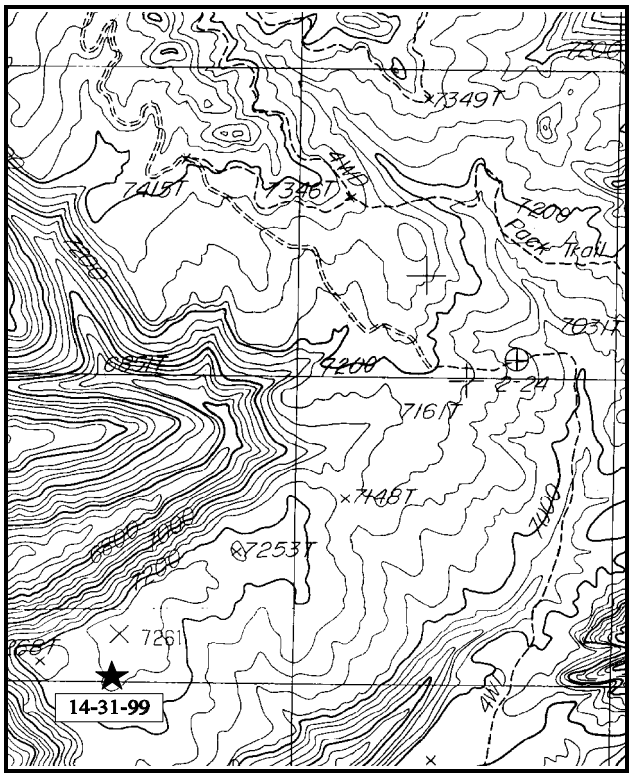
Study site name: Chippean Ridge . Range type: Mixed Mountain Brush .

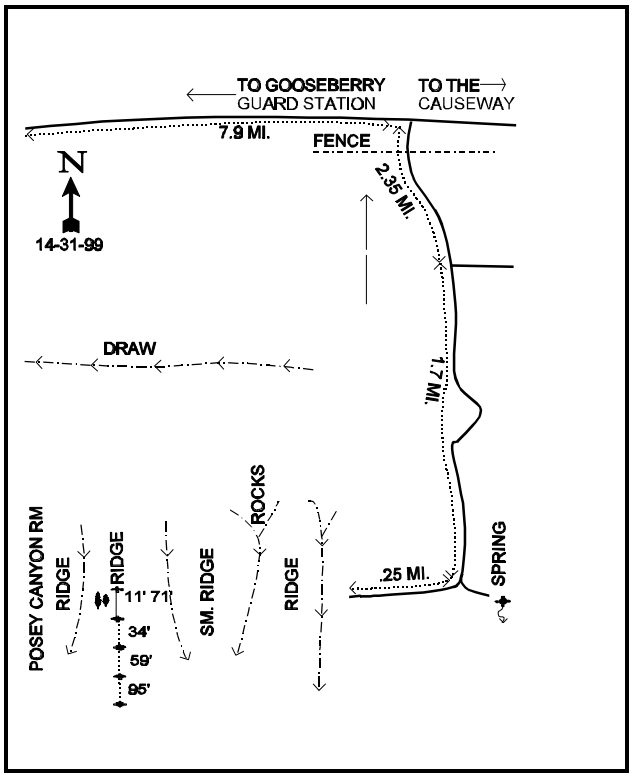
Compass bearing: frequency baseline 181°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

From the Gooseberry Guard Station go north and east towards 'The Causeway' for 7.9 miles to a fork. Turn right off the main road passing through a gate/fence shortly after the turn. Continue 2.35 miles to a fork and bear right. Drive 1.7 miles to another fork and turn right on a very faint overgrown road (left road ends about a 100 ft or so near a spring). Continue on another 0.25 miles to the end of the road. Continue to follow the old road or trail west at a slight rise in elevation about 2/3 of a mile to the third ridge. There are two Ponderosa pines 30 ft apart which are near the ridge's northern apex. The 0 ft baseline stake is 50 ft away from the lowermost, larger PIPO at a bearing of 45° T. The baseline is marked with half high steel fence posts.





Map Name: Chippean Rocks Diagrammatic Sketch

Township 34S , Range 20E , Section 36 UTM 4182118.618 N, 616540.741 E

DISCUSSION

Trend Study No. 14-31(36-19)

Chippean Ridge is a new study site that was initiated because of elk use on this area during the winter and spring. It is a mountain brush community that is dominated by serviceberry and mountain big sagebrush on a 8% to 10% percent slope with a southern aspect. Elevation is approximately 7,200 feet. There are a few scattered ponderosa and pinyon pines throughout the study area, but further up the ridge, ponderosa and manzanita are the dominant species association. Point quarter data from 1999 estimate 29 juniper and 33 pinyon trees/acre. Average diameter of juniper is 8.5 inches, while that of pinyon is 5 inches.

The site is principally a elk winter/spring range. Several elk antler drops were found on site in 1992, but all appeared to be from the previous winter ('91). Both elk and deer pellet groups were common, but not directly on the vegetative transects. Pellet group data from 1999 estimate 7 deer days use/acre (17 ddu/ha), 24 elk days use/acre (59 edu/ha), and 4 cow days use/acre (10 cdu/ha). About 80% of the elk pellet groups appear to be from the previous fall, however some pellet groups were recent. All cattle pats were from the previous year. The area is currently closed to cattle grazing. Rabbit sign was abundant.

The soil on the site is deep and compacted with an estimated effective rooting depth of nearly 25 inches. It has a sandy clay loam texture with a neutral pH (7.2). Phosphorus is limited on the site at only 4.1 ppm. Values less than 10 ppm limit normal plant growth and development. Parent material is sandstone and the soil is very sandy and loose on the surface. Rock is uncommon on the surface and in the profile. A compaction layer is present about 8 inches in depth. Starting at the 200 foot stake on the study site baseline, the compaction layer is impenetrable to the soil penetrometer making effective rooting depth measurements more shallow. There are small scattered areas without litter cover and only small amounts of vegetative cover, showing signs of soil movement and loss with increased amounts of rock present. On the lower south end of the site, there is a fairly large active gully.

The shrub component is quite diverse with 11 species encountered on the sampling belts in 1992 and 13 in 1999. Browse is dominated by mature serviceberry, mountain big sagebrush, and true mountain mahogany. These species show moderate to heavy browsing and are in good health. Many of the serviceberry plants are tall and partly unavailable for use. Serviceberry provided 39% of the browse cover in 1992 and 31% by 1999. Density declined in 1999 due to a reduction in the number of young plants sampled.

The herbaceous understory is diverse with seeded crested wheatgrass and smooth brome dominating the site. They currently ('99) account for 47% of the grass cover. Bulbous bluegrass is also common and it provided 40% of the grass cover in 1992 and 38% in 1999. Forbs are diverse and several species are relatively common. However, all forbs combined produced only 3% cover in 1992 and 5% in 1992.

1992 APPARENT TREND ASSESSMENT

The trend for soils appears to be in a state of decline. There are numerous signs of soil movement and there is a large active gully on the lower end of the site. The browse trend appears to be improving because of good biotic potentials (proportion of young to the population) for the key species and excellent young form class ratios, both characteristics of a growing population. The herbaceous understory appears to be stable and in good health with nine species of grasses and 18 species of forbs. The grasses dominate, making up 83% of the herbaceous understory cover.

1999 TREND ASSESSMENT

Trend for soil down slightly due to a slight decline in litter cover and an increase in percent cover of bare ground. Protective ground cover is not continuous and exposed bare ground shows some signs of erosion.

Trend for the key browse species, serviceberry, mountain big sagebrush, and true mountain mahogany is considered stable. Density of serviceberry and mountain big sagebrush declined but this appears to be due to a reduction in young plants sampled. Utilization of the key species is moderate to heavy, yet vigor is good and percent decadence is low. Another positive trend indicator is the decline in density of broom snakeweed, an aggressive increaser, from 3,120 in 1992 to 1,000 plants/acre in 1999. Trend for the herbaceous understory is stable for grasses and up slightly for forbs. The most abundant grass is bulbous bluegrass which provides 38% of the grass cover. Intermediate wheatgrass and smooth brome are also abundant. Together they account for 47% of the grass cover. The only significant change in the grass composition is a decline in the nested frequency of needle-and-thread. Forbs are diverse but no species is dominant. Several forb species have increased significantly in nested frequency since 1992. Overall trend for the herbaceous understory is considered up slightly.

TREND ASSESSMENT
soil - slightly down
browse - stable
herbaceous understory - stable for grasses and up slightly for forbs, up slightly overall

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 31

Type	Species	Nested Frequency '92	'99	Quadrat Frequency '92	'99	Average Cover % '92	'99
G	Agropyron cristatum	72	64	23	24	4.77	2.73
G	Bouteloua gracilis	7	13	2	3	.30	.45
G	Bromus inermis	143	132	49	53	2.80	3.42
G	Bromus tectorum (a)	2	-	1	-	.00	-
G	Carex spp.	4	1	3	1	.33	.03
G	Oryzopsis hymenoides	-	8	-	2	-	.15
G	Poa bulbosa	165	175	50	49	6.51	5.01
G	Poa fendleriana	13	8	5	2	.27	.06
G	Sitanion hystrix	3	-	1	-	.00	-
G	Stipa comata	74	61	35	32	1.29	1.23
G	Vulpia octoflora (a)	-	6	-	2	-	.01
Total for Annual Grasses		2	6	1	2	0.00	0.00
Total for Perennial Grasses		481	462	168	166	16.29	13.09
Total for Grasses		483	468	169	168	16.29	13.10
F	Castilleja linariaefolia	6	4	4	3	.04	.04
F	Calochortus nuttallii	-	3	-	1	-	.00
F	Chaenactis douglasii	67	*28	27	14	1.34	.34
F	Cirsium spp.	-	1	-	1	-	.03
F	Comandra pallida	35	*64	16	28	.14	1.09
F	Collinsia parviflora (a)	-	4	-	1	-	.03
F	Crepis acuminata	3	6	1	3	.00	.01
F	Epilobium brachycarpum (a)	-	3	-	2	-	.18

Type	Species	Nested Frequency '92	'99	Quadrat Frequency '92	'99	Average Cover % '92	'99
F	Eriogonum racemosum	52	57	26	25	.84	.57
F	Eriogonum umbellatum	5	16	2	5	.03	.17
F	Heterotheca villosa	-	1	-	1	-	.03
F	Hymenoxys acaulis	9	26	4	13	.10	.19
F	Lesquerella rectipes	67	80	33	34	.26	.25
F	Lomatium spp.	3	*34	2	14	.06	.58
F	Lupinus sericeus	3	12	1	4	.03	.31
F	Machaeranthera canescens	7	*21	3	9	.01	.04
F	Penstemon comarrhenus	17	8	7	3	.06	.04
F	Phlox longifolia	26	*53	11	24	.10	.14
F	Polygonum douglasii (a)	38	*5	18	2	.11	.01
F	Senecio multilobatus	14	*60	8	27	.12	.75
F	Sphaeralcea coccinea	17	*1	8	1	.06	.00
F	Zigadenus paniculatus	-	3	-	2	.00	.03
Total for Annual Forbs		38	12	18	5	0.11	0.21
Total for Perennial Forbs		331	478	153	212	3.25	4.66
Total for Forbs		369	490	171	217	3.36	4.88

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 14 , Study no: 31

Type	Species	Strip Frequency '92	'99	Average Cover % '92	'99
B	Amelanchier utahensis	25	24	11.52	8.10
B	Artemisia nova	0	3	-	.00
B	Arctostaphylos patula	2	4	2.96	4.88
B	Artemisia tridentata vaseyana	55	57	5.14	4.48
B	Cercocarpus montanus	11	14	4.82	4.77
B	Chrysothamnus depressus	14	8	.69	.23
B	Coryphantha vivipara arizonica	0	1	.00	.00
B	Gutierrezia sarothrae	51	21	.98	.16
B	Juniperus osteosperma	1	1	.03	.15
B	Opuntia spp.	14	4	.06	.01
B	Pediocactus simpsonii	0	1	-	-
B	Pinus edulis	4	3	3.40	2.97
B	Purshia tridentata	1	0	.15	.00
B	Quercus gambelii	0	0	-	-
B	Symphoricarpos oreophilus	5	2	.15	.15
Total for Browse		183	143	29.92	25.94

CANOPY COVER --
Herd unit 14 , Study no: 31

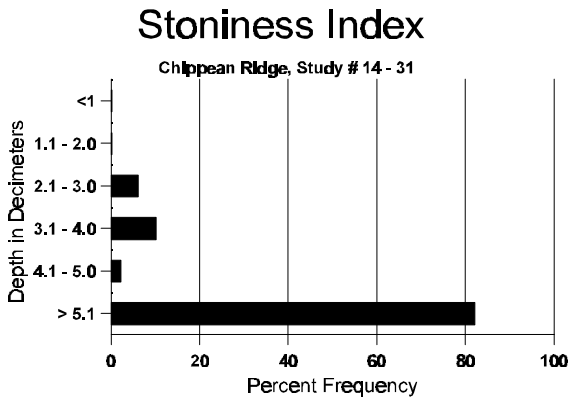
Species	Percent Cover '99
Amelanchier utahensis	2
Cercocarpus montanus	3
Juniperus osteosperma	.80
Pinus edulis	5
Quercus gambelii	1

BASIC COVER --
Herd unit 14 , Study no: 31

Cover Type	Nested Frequency '92	'99	Average Cover % '92	'99
Vegetation	382	381	41.22	40.61
Rock	10	14	.49	.26
Pavement	-	27	0	.12
Litter	269	452	43.40	40.94
Cryptogams	136	147	6.87	8.56
Bare Ground	260	314	22.28	29.17

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 31, Study Name: Chippean Ridge

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
24.7	61.6 (17.8)	7.2	57.6	17.8	24.6	1.2	4.1	102.4	0.7



PELLET GROUP FREQUENCY --
Herd unit 14 , Study no: 31

Type	Quadrat Frequency '92	'99	Pellet Transect Days Use/Acre (ha) '99
Rabbit	15	34	N/A
Elk	1	3	24 (59)
Deer	10	6	7 (17)
Cattle	-	2	4 (10)

BROWSE CHARACTERISTICS --
Herd unit 14 , Study no: 31

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	92	4	-	-	-	-	-	13	-	-	17	-	-	-	340			17
	99	6	-	-	1	-	-	2	-	-	9	-	-	-	180			9
Y	92	17	4	1	3	-	-	10	-	-	35	-	-	-	700			35
	99	4	1	-	4	-	-	-	-	-	9	-	-	-	180			9
M	92	5	20	2	-	2	-	-	-	-	29	-	-	-	580	-	-	29
	99	3	1	6	-	-	13	1	1	-	25	-	-	-	500	64	87	25

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	41%	05%	00%	-47%
'99	06%	56%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'92	1280	-
	'99	680	-

Artemisia nova																		
M	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	10	-	-	-	-	-	-	-	-	10	-	-	-	200	7	11	10
D	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
X	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'92	0		0%
	'99	240		17%

Arctostaphylos patula																		
Y	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60	44	143	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	00%	00%	00%	+50%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'92	40	-
	'99	80	-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	92	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	92	16	60	8	1	-	-	5	-	-	90	-	-	-	1800			90
	99	8	2	-	1	-	-	-	-	-	11	-	-	-	220			11
M	92	10	26	21	3	-	-	6	-	-	64	1	1	-	1320	-	-	66
	99	39	15	10	3	3	2	-	-	-	72	-	-	-	1440	20	30	72
D	92	1	5	2	-	-	-	1	-	-	2	-	4	3	180			9
	99	10	3	2	2	-	-	-	-	-	11	-	-	6	340			17
X	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	280			14

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	55%	19%	05%	-39%
'99	23%	14%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
'92	3300	Dec:		5%
'99	2000			17%

Cercocarpus montanus																		
S	92	4	-	-	4	-	-	1	-	-	9	-	-	-	180			9
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	92	3	1	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	2	1	-	1	-	-	-	-	-	4	-	-	-	80			4
M	92	-	5	1	1	1	-	-	-	-	8	-	-	-	160	-	-	8
	99	2	2	-	-	4	1	1	2	-	12	-	-	-	240	66	73	12

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	58%	08%	00%	+25%
'99	44%	06%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'92	240	Dec:		-
'99	320			-

Chrysothamnus depressus																		
S	92	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	92	6	5	-	1	-	-	-	-	-	12	-	-	-	240			12
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	92	19	2	-	-	-	-	1	-	-	22	-	-	-	440	-	-	22
	99	14	-	2	1	-	-	-	-	-	17	-	-	-	340	7	15	17
D	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	-	-	-	3	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	21%	00%	00%	-38%
'99	00%	10%	14%	

Total Plants/Acre (excluding Dead & Seedlings)				
'92	680	Dec:		0%
'99	420			14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Coryphantha vivipara arizonica																		
M	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	2	3	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		0	Dec:		-
													'99		20			-
Gutierrezia sarothrae																		
S	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
Y	92	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	99	29	-	-	2	-	-	-	-	-	31	-	-	-	620			31
M	92	145	-	-	2	-	-	1	-	-	148	-	-	-	2960	-	-	148
	99	17	2	-	-	-	-	-	-	-	19	-	-	-	380	5	5	19
D	92	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		.64%							-68%					
	'99	04%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		3120	Dec:		1%
													'99		1000			0%
Juniperus osteosperma																		
S	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	92	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		00%									+ 0%			
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		20	Dec:		-
													'99		20			-
Opuntia spp.																		
Y	92	10	-	-	-	-	-	1	-	-	11	-	-	-	220			11
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	92	7	-	-	1	-	-	-	-	-	8	-	-	-	160	-	-	8
	99	3	-	-	1	-	-	-	-	-	3	-	1	-	80	3	7	4
D	92	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	99	1	-	-	-	-	-	-	-	-	-	-	1	-	20			1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		05%									-65%			
	'99	00%		00%		29%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		400	Dec:		5%
													'99		140			14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pediocactus simpsonii																		
M	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	3	5	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		0	Dec:		-
													'99		20			-
Pinus edulis																		
S	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
Y	92	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	92	3	-	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3
	99	1	-	-	-	-	-	-	1	-	2	-	-	-	40	-	-	2
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		00%									-25%			
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		80	Dec:		-
													'99		60			-
Purshia tridentata																		
Y	92	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	100%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		20	Dec:		-
													'99		0			-
Quercus gambelii																		
S	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	28	25	0
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'92	00%		00%		00%												
	'99	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'92		0	Dec:		-
													'99		0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	92	1	-	-	-	-	-	1	-	-	2	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	92	3	1	-	-	-	-	1	-	-	5	-	-	-	100			5
	99	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
M	92	1	-	-	-	-	-	2	-	-	3	-	-	-	60	-	-	3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	31	47	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'92	13%	00%	00%	-75%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'92	160	Dec:	-
	'99	40		-